



PATENT
Attorney Docket No. ASX-015CP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Chen et al.
SERIAL NO.: 09/774,165 GROUP NO.: 1765
FILING DATE: January 26, 2001 EXAMINER: Not yet assigned.
TITLE: INTEGRATED PLASMA CHAMBER AND INDUCTIVELY-
COUPLED TOROIDAL PLASMA SOURCE

J. Heron
#6
10/10/2001

CERTIFICATE OF FIRST CLASS MAILING UNDER 37 C.F.R. 1.8

I hereby certify that this correspondence, and any document(s) referred to as enclosed herein, is/are being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to the Assistant Commissioner for Patents, Washington, DC 20231 on this 19th day of July, 2001.

Olivia J. Mannion
Olivia J. Mannion

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Submitted herewith are: Transmittal Form (1 page); Supplemental Information Disclosure Statement (3 pages); Form PTO-1449 (11 pages); References Labeled A1 to A68, B1 to B3 and C1 to C112; and a Mailroom Postcard.

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TRANSMITTAL FORM

Application Serial Number	09/774,165
Filing Date	January 26, 2001
First Named Inventor	Chen et al.
Group Art Unit	1765
Examiner Name	Not yet assigned.
Attorney Docket No.	ASX-015CP

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ENCLOSURES (check all that apply)

- | | | |
|--|---|---|
| <input type="checkbox"/> Fee Transmittal Form
<input type="checkbox"/> Check Attached
<input type="checkbox"/> Copy of Fee Transmittal Form

<input type="checkbox"/> Amendment/Response

<input type="checkbox"/> After Final
<input type="checkbox"/> Affidavits/declaration(s)
<input type="checkbox"/> Letter to Official Draftsperson including Drawings [Total Sheets ____]

<input type="checkbox"/> Extension of Time Request

<input checked="" type="checkbox"/> Supplemental Information Disclosure Statement
<input checked="" type="checkbox"/> Form PTO-1449
<input checked="" type="checkbox"/> Copies of IDS Citations

<input type="checkbox"/> Certified Copy of Priority Document(s)

<input type="checkbox"/> Response to Missing Parts/Incomplete Application | <input type="checkbox"/> Copy of Notice to File Missing Parts of Application (PTO-1553)

<input type="checkbox"/> Formal Drawing(s)

<input type="checkbox"/> Petition Routing Slip (PTO/SB/69) and Accompanying Petition to Convert to a Provisional Application

<input type="checkbox"/> Power of Attorney (Revocation of Prior Powers)

<input type="checkbox"/> Terminal Disclaimer

<input type="checkbox"/> Executed Declaration and Power of Attorney for Utility or Design Patent Application

<input type="checkbox"/> Small Entity Statement

<input type="checkbox"/> Request for Refund

<input type="checkbox"/> After Allowance Communication to Group | <input type="checkbox"/> Appeal Communication to Board of Patent Appeals and Interferences

<input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)

<input type="checkbox"/> Status Letter

<input checked="" type="checkbox"/> Return Receipt Postcard
<input checked="" type="checkbox"/> Certificate of First Class Mailing under 37 C.F.R. 1.8

<input type="checkbox"/> Additional Enclosure(s) (please identify below) |
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CORRESPONDENCE ADDRESS

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 High Street Tower
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SIGNATURE BLOCK

Respectfully submitted,

 Date: July 19, 2001
 Reg. No. 36,471
 Tel. No.: (617) 248-7369
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 Joseph A. Caputo, Jr.
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Assistant Commissioner for Patents
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SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with the provisions of 37 C.F.R. 1.97 and 1.98, Applicants hereby make of record the patents and publications listed on the accompanying Form PTO-1449, and other information contained herein, for consideration by the Examiner in connection with the examination of the above-identified patent application. Copies of the patents and publications are enclosed.

REMARKS

In accordance with the provisions of 37 C.F.R. 1.97, this statement is being filed (CHECK ONE):

- ☒ (1) within three (3) months of the **filing date** of a national application other than a continued prosecution application under 37 C.F.R. 1.53(d), or within three (3) months of the **date of entry of the national stage** as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the **first Office action** on the merits, or before the mailing of a **first Office action** after the filing of a request for continued examination under 37 C.F.R. 1.114; or
- ☐ (2) after the period defined in (1) but before the mailing date of a **final action** or a **notice of allowance** under 37 C.F.R. 1.311, and
- ☐ the requisite Statement is below, **OR**
- ☐ the requisite fee under 37 C.F.R. 1.17(p), namely **\$180.00**, is included herein, or

- ☐ (3) after the mailing date of a **final action** or **notice of allowance** but before the payment of the **issue fee**, **AND**
- ☐ the requisite Statement is below, **AND**
- ☐ the requisite petition fee under 37 C.F.R. 1.17(p), namely **\$180.00** is included herein.

It is respectfully requested that each of the patents and publications listed on the attached Form PTO-1449, and other information contained herein, be made of record in this application.

STATEMENT

U.S. Patent No. 6,150,628, the parent of this patent application, is the subject of litigation in Delaware, Civil Action No. 00-1004-JJF. The Defendant in the litigation has brought the patents and publications listed on the attached Form PTO-1449 to Applicants' attention during the discovery process.

In addition, the Defendant filed a First Amended Answer, Affirmative Defenses and Counterclaim (along with other papers) on June 15, 2001. The Defendant made the following allegations in paragraph 15 of its Affirmative Defenses:

The '628 patent is unenforceable because of inequitable conduct before the U.S. Patent and Trademark Office. The following are presently known particular examples of such inequitable conduct:

(a) In response to a rejection of claims of the application which matured into the '628 patent over an article by Kogan et al. and a patent to Zarowin et al., the applicants, through their attorney, stated that the systems described in the Kogan and Zarowin references "are driven by conventional RF power generators" that "require expensive and complex power delivery systems," in contrast to the power generators specified in the claims. The disclosures of Kogan and the Zarowin, however, are not restricted to systems driven only by "conventional" RF power generators. This misleading characterization of prior art was material to the patentability of the claimed invention and done with an intent to mislead the U.S. PTO into allowing claims of the '628 patent.

(b) In response to a rejection of claims of the application which matured into the '628 patent in view of an article by Maier et al., the applicants, through their attorney, knowingly mischaracterized Maier as "nonanalogous prior art" that should not be considered because it was directed to the problem of "toroidal confinement and heating of a thermonuclear plasma," rather than the problem addressed in the application. The disclosures of Maier were highly pertinent, however, because the means of plasma generation described and claimed in the application were completely analogous to the

means used for heating thermonuclear plasmas. This misleading characterization of prior art was material to the patentability of the claimed invention and done with an intent to mislead the U.S. PTO into allowing claims of the '628 patent.

(c) After receiving a Notice of Allowability, the applicants, through their attorney, submitted a supplemental Information Disclosure Statement citing a reference entitled "Osram Endura 150W Product Information Brochure" dated November 1996 ("Osram Brochure"). Because the applicants disclosed the Osram Brochure after the Notice of Allowability was issued, the Patent Office did not consider the patentability of the claimed invention in view of that reference. Moreover, the applicants asserted without proof that the Osram Brochure did not constitute prior art because the applicants "made their invention prior to the date of the reference," even though the applicants did not exercise diligence toward reduction to practice of their claimed invention prior to November 1996. The untimely submission of the Osram Reference and the making of false statements regarding the applicants' prior invention were material to the patentability of the claimed invention and done with an intent to mislead the U.S. PTO into allowing claims of the '628 patent.

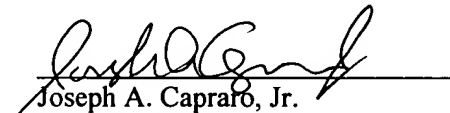
Applicants believe that the Defendant's allegations are without merit and expect to be fully vindicated through the judicial process. In accordance with their duty of candor and good faith, Applicants submit this information (and the enclosed documents) for consideration.

Respectfully submitted,

Date: July 19, 2001
Reg. No. 36,471

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FORM PTO - 1449

SUPPLEMENTAL INFORMATION
DISCLOSURE STATEMENT

ATTORNEY DOCKET NO.: ASX-015CP

APPLICANTS: Chen et al.

SERIAL NO.: 09/774,165

FILING DATE: January 26, 2001

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U.S. PATENT DOCUMENTS

EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
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	A1	H627	04/04/89	Peng			10/03/85
	A2	Des. 384,173	09/23/97	Godyak et al.			07/19/96
	A3	4,049,940	09/20/97	Moisan et al.			10/30/75
	A4	4,065,369	12/27/77	Ogawa et al.			07/15/76
	A5	4,285,800	08/25/81	Welty			04/18/79
	A6	4,324,611	04/13/82	Vogel et al.			06/26/80
	A7	4,350,578	09/21/82	Frieser et al.			05/11/81
	A8	4,368,092	01/11/83	Steinberg et al.			08/05/81
	A9	4,461,954	07/24/84	Inoue			04/19/82
	A10	4,631,105	12/23/86	Carroll et al.			04/22/85
	A11	4,668,336	05/26/87	Shimkunas			05/23/86
	A12	4,668,366	05/26/87	Zarowin			10/23/85
	A13	4,793,975	12/27/88	Drage			04/24/87
	A14	4,810,933	03/07/89	Moisan et al.			07/02/86
	A15	4,853,250	08/01/89	Boulos et al.			05/11/88
	A16	4,859,908	08/22/89	Yoshida et al.			09/23/87
	A17	4,897,282	01/30/90	Kniseley et al.			08/23/88
	A18	4,906,898	03/06/90	Moisan			08/08/89
	A19	4,948,458	08/14/90	Ogle			08/08/89
	A20	5,000,771	03/19/91	Fleming, Jr. et al.			03/90
	A21	5,008,593	04/16/91	Schlie et al.			04/13/90
	A22	5,016,332	05/21/91	Reichelderfer, deceased et al.			09/29/89
	A23	5,099,100	03/24/92	Bersin et al.			09/30/91
	A24	5,144,196	09/01/92	Gegenwart et al.			

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FORM PTO - 1449				ATTORNEY DOCKET NO.: ASX-015CP			
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				SERIAL NO.: 09/774,165			
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U.S. PATENT DOCUMENTS							
EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE

	A25	5,180,150	01/19/93	Prusak et al.			01/24/92
	A26	5,198,718	03/30/93	Davis et al.			
	A27	5,206,516	04/27/93	Keller et al.			04/29/91
	A28	5,280,154	01/18/94	Cuomo et al.			01/30/92
	A29	5,352,249	10/04/94	Vollaro			08/28/92
	A30	5,353,314	10/04/94	Schaffer			09/30/91
	A31	5,364,496	11/15/94	Bollinger et al.			08/20/93
	A32	5,365,147	11/15/94	Shinohara et al.			
	A33	5,372,674	12/13/94	Steinberg			01/28/94
	A34	5,394,061	02/28/95	Fujii			05/05/93
	A35	5,397,962	03/14/95	Moslehi			06/29/92
	A36	5,419,803	05/30/95	Mumola			11/17/93
	A37	5,468,955	11/21/95	Chen et al.			12/20/94
	A38	5,473,291	12/05/95	Brounley			04/27/95
	A39	5,515,167	05/07/96	Ledger et al.			09/13/94
	A40	5,534,231	07/09/96	Savas			01/17/95
	A41	5,563,709	10/08/96	Poultney			09/13/94
	A42	5,565,036	10/15/96	Westendorp et al.			01/19/94
	A43	5,567,255	10/22/96	Steinberg			10/13/94
	A44	5,567,268	10/22/96	Kadomura			01/19/95
	A45	5,568,015	10/22/96	Holber et al.			02/16/95
	A46	5,585,766	12/17/96	Shel			10/27/94
	A47	5,610,102	03/11/97	Gardopée et al.			11/15/93
	A48	5,637,279	06/10/97	Besen et al.			08/31/94
	A49	5,639,519	06/17/97	Patrick et al.			11/20/95

EXAMINER	DATE CONSIDERED
	SEP 18 2001

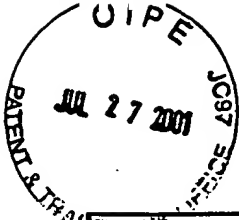


FORM PTO - 1449				ATTORNEY DOCKET NO.: ASX-015CR			
SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT				APPLICANTS: Chen et al.			
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U.S. PATENT DOCUMENTS							
EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE

	A50	5,647,913	07/15/97	Blalock			05/25/95
	A51	5,662,819	09/02/97	Kadomura			02/03/95
	A52	5,681,393	10/28/97	Takagi			01/11/96
	A53	5,688,415	11/18/97	Bollinger et al.			05/30/95
	A54	5,700,297	12/23/97	Vollaro			02/20/96
	A55	5,767,628	06/16/98	Keller et al.			12/20/95
	A56	5,779,849	07/14/98	Blalock			01/30/97
	A57	5,798,016	08/25/98	Oehrlein et al.			03/08/94
	A58	5,789,867	08/04/98	Westendorp et al.			02/02/96
	A59	5,811,022	09/22/98	Savas et al.			11/15/94
	A60	5,814,154	09/29/98	Boitnott			01/23/97
	A61	5,834,905	11/10/98	Godyak et al.			03/27/96
	A62	5,874,012	02/23/99	Kanai et al.			03/08/96
	A63	5,883,470	03/16/99	Hatakeyama et al.			02/13/97
	A64	5,892,198	04/06/99	Barnes et al.			03/29/96
	A65	5,914,278	06/22/99	Boitnott et al.			01/23/97
	A66	5,932,180	08/03/99	Zhang et al.			06/09/97
	A67	5,965,034	10/12/99	Vinogradov et al.			10/28/96
	A68	6,063,233	05/16/00	Collins et al.			10/21/96

FOREIGN PATENT DOCUMENTS									
EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRACT ONLY	ENGLISH LANG (Y/N)
	B1	61-139029	6/26/86	JP			12/10/84	N	Y-Abstract
	B2	5-144594	06/11/93	JP			11/19/91	N	Y-Abstract

EXAMINER	DATE CONSIDERED
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SHEET 4 OF 11

FORM PTO - 1449				ATTORNEY DOCKET NO.: ASX-0150P			
SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT				APPLICANTS: Chen et al.			
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EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE

	B3	2-260399	10/23/90	JP			03/31/89	N	Y-Abstract
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OTHER ART, JOURNAL ARTICLES, ETC.

EXAM. INIT.	OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)								
	C1	Akulina et al., "Injection and Confinement of Plasma in a Stellarator with a Multipolar (l = 2) Helical Field," <u>Proceedings of Conference of International Atomic Energy Agency</u> (1965) pp.733-749.							
	C2	Anderson, "Electrodeless Fluorescent Lamps Excited by Solenoidal Electric Field," <u>IES Transaction, Illuminating Engineering</u> (April 1969) pp. 236-242.							
	C3	Ashida et al., "Measurements of Pulsed-Power Modulated Argon Plasmas in an Inductively Coupled Plasma Source," <u>J. Vac. Sci. Technol.</u> , (Mar/Apr 1996) pp. 391-397.							
	C4	Asmussen, "Electron Cyclotron Resonance Microwave Discharges for Etching and Thin-Film Deposition," <u>Journal of Vacuum Science & Technology A: Vacuum, Surfaces, and Films</u> , Vol. 7, No. 3 (May 1989) pp. 883-893. Abstract printed from Online Journal Publishing Service.							
	C5	Bacri et al., "Influence of Departures From Complete Thermodynamic Equilibrium on Transport Coefficient Values: Application to an Oxygen Plasma," <u>Plasma Sources Sci. Technol.</u> , (1994) pp. 114-121.							
	C6	Baldwin et al., "MgF ₂ Optical Films: Ion-Beam-Assisted Deposition of Magnesium Fluoride in a Conventional Electron Beam Evaporator and the Resulting Film Properties," <u>Society of Vacuum Coaters: 40th Annual Technical Conference Proceedings</u> (1997) pp. 1-5.							
	C7	Bell, "Ring Discharge Excitation of Gas Ion Lasers," <u>Applied Physics Letters</u> , Vol. 7, No. 7 (October 1965) p. 190.							
	C8	Benova et al., "Axial Distributions of Metastable Atoms and Charged Particles in an Ultrahigh Frequency Argon Plasma Column at Moderate Pressures," <u>J. Appl. Phys.</u> , Vol. 79, No. 8 (April 15, 1996) pp. 3848-3852.							
	C9	Benova et al., "Theoretical Study of the Influence of a Metal Enclosure on the Parameters of a Plasma Column Sustained by a Traveling Electromagnetic Surface Wave," <u>Physica Scripta</u> , Vol. 43 (1991) pg. 68-73.							
	C10	Bhave et al., "Two- and Three-Body Ion-Electron Recombination Rate Coefficients in Neon*," <u>Aust. J. Phys.</u> , Vol. 48 (1995) pp. 503-513.							

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EXAM.
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OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)

C11	Bishop et al., "Power Balance Measurements and Particle Loss Rate in Ohmically Heated Discharges in the C Stellarator," <u>Plasma Physics and Controlled Nuclear Fusion Research: Proceedings of Second Conference of International Atomic Energy Agency</u> , Vol. 2 (1966) pp. 673-685.
C12	Bluem et al., "Spatial Investigation of a Large Diameter Microwave Plasma," <u>J. Phys. D: Appl. Phys.</u> Vol. 28 (1995) pp. 1529-1533.
C13	Böhle et al., "On the Influence of Excited Atoms on the Electron Kinetics of a Surface Wave Sustained Argon Plasma," <u>Plasma Sources Sci. Technol.</u> Vol. 3 (1994) pp. 80-87.
C14	Boisse-Laporte et al., "Microwave Discharges Produced by Surface Waves in Argon Gas," <u>Journal of Physics D: Applied Physics</u> , Vol. 20 (February 14, 1987) p. 197.
C15	Bol, "Density Fluctuations in the Etude Stellarator," <u>The Physics of Fluids</u> , Vol. 7, No. 11 (November 1964) pp. 1855-1856.
C16	Bollinger et al., "Rapid, Nonmechanical, Damage-Free Figuring of Optical Surfaces Using Plasma-Assisted Chemical Etching (PACE): Part I Experimental Results," <u>SPIE Vol. 966 Advances in Fabrication and Metrology for Optics and Large Optics</u> (1988) pp. 82-90.
C17	Bollinger et al., "Rapid, Non-Contact Optical Figuring of Aspheric Surfaces With Plasma Assisted Chemical Etching (PACE)," <u>SPIE Vol. 1333 Advanced Optical Manufacturing and Testing</u> (1990) pp. 44-57.
C18	Bollinger et al., "Rapid Optical Figuring of Aspherical Surfaces With Plasma Assisted Chemical Etching (PACE)," <u>SPIE Vol. 1618 Large Optics II</u> (1991) pp. 14-21.
C19	Boswell et al., "Etching of Si by SF ₆ in a Radio Frequency Double Cathode," <u>Journal of Vacuum Science & Technology B: Microelectronics and Nanometer Structures</u> , Vol. 5, No. 4 (July 1987) pp. 883-888. Abstract printed from Online Journal Publishing Service.
C20	Bourdon et al., "Three-Body Recombination Rate of Atomic Nitrogen in Low-Pressure Plasma Flows," <u>Physical Review E</u> , Vol. 54, No. 2 (August 1996) pp. 1888-1898.
C21	Carruth, Jr., et al., "Method for Determination of Neutral Atomic Oxygen Flux," <u>Rev. Sci. Instrum.</u> , Vol. 61, No. 4 (1990) pp. 1211-1216.
C22	Chen, "Industrial Applications of Low-Temperature Plasma Physics*," <u>Phys. Plasmas</u> , Vol. 2, No. 6 (June 1995) pp. 2164-2175.
C23	Cherrington, "Chapter 8: DC Discharges-The Positive Column," <u>Gaseous Electronics and Gas Lasers</u> Pergamon Press - New York (1979) pp. 144-160.
C24	Chiu et al., "What the DryScrub® System Can Do For PFC Gas Treatment?," <u>Electrochemical Technology Corp. Brochure</u> (undated).

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OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)

C25	Coburn et al., "Ion-and Electron-Assisted Gas-Surface Chemistry - An Important Effect in Plasma Etching," <u>Journal of Applied Physics</u> , Vol. 50, No. 5 (May 1979) pp. 3189-3196. Abstract printed from Online Journal Publishing Service.
C26	Cohen et al., "Induced Magnetic Field Effects in Inductively Coupled Plasmas," <u>Physics of Plasma</u> , Vol. 3, No. 5 (May 1996) pp. 1839-1847. Abstract printed from Online Journal Publishing Service.
C27	Collins et al., "Measurement of the Rate Coefficient for the Recombination of He ⁺ with Electrons*," <u>Physical Review A</u> , Vol. 6, No. 4 (October 1972) pp. 1545-1558.
C28	Darchicourt et al., "Influence of the Radial Electron Density Profile on the Determination of the Characteristics of Surface-Wave-Produced Discharges," <u>J. Phys. D: Applied Physics</u> , Vol. 21 (1988) pp. 293-301.
C29	Denneman, "Determination of Electromagnetic Properties of Low-Pressure Electrodeless Inductive Discharges," <u>J. Phys. D: Appl. Phys.</u> (1990) pp. 293-298.
C30	Eckhardt et al., "Comparison of Alkali Plasma Loss Rates in a Stellarator and in a Toroidal Device With Minimum Mean-B Properties," <u>Plasma Physics and Controlled Nuclear Fusion Research: Proceedings of Second Conference of International Atomic Energy Agency</u> , Vol. 2 (1966) pp. 719-731.
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C32	Feoktistov et al., "Self-Consistent Modeling of Low-Pressure RF Discharges in Oxygen Plasma," <u>J. Phys. D: Appl. Phys.</u> Vol. 26 (1995) pp. 1346-1353.
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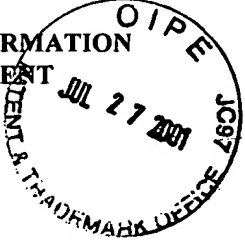
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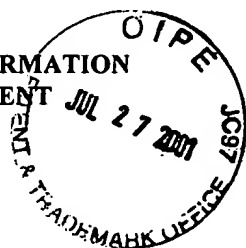
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APPLICANTS: Chen et al.

SERIAL NO.: 09/774,165

FILING DATE: January 26, 2001

GROUP: 1765

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